

Trim panel, suitable for attaching to a displaceable seat, and seat

5 The invention relates to a trim panel, suitable for attaching to a displaceable seat, in particular a vehicle seat, the seat having a seat component which can be displaced relative to a seat substructure.

10 Seats of this type are known in general. In the case of conventional vehicle seats, the construction causes parts of the structure or the displacing device of the seat to be visible laterally below the seat cushion. Since these metal elements do not provide an attractive view, they are frequently concealed, in particular in higher-value vehicles. For this purpose, coverings or panels are provided on the structure and/or the cushion shell, the coverings or panels being fastened to the structure or to the seat displacer by means of fastening elements in complicated and expensive 15 installation operations. In the process, panels are frequently damaged and have to be removed and replaced in a time-consuming process. For example, the publication DE 36 23 634 C2 discloses a seat which has a supporting frame, a spring system fastened to the 20 supporting frame, an upholstery arranged above the spring system, a side panel and a cover covering the upholstery, with the edges of the cover being stretched towards the supporting frame in order to obtain a spring preload. In this connection, resilient, i.e. 25 movable, parts, for example the cover or the panel, are connected to parts fixed on the structure or fixed on the vehicle, with the result that, in the case of a movement or in the case of a spring deflection, a component of this type, which connects the movable and 30 the fixed components of the vehicle seat, is subjected to extremely high mechanical loads and therefore also 35 to a high degree of wear. In the case of a

displacement, for example an adjustment in inclination, the panel, for example, is then deformed.

Furthermore, it is generally known in the prior art to 5 provide a vehicle seat with a trim panel, in particular a lateral trim panel, with a panel which is fixed on the structure and in relation to which a seat cushion can move, in particular can be adjusted in height and in inclination. The problem arises in this case that a 10 very high degree of wear occurs at the transition between the movable seat cushions and the panel fixed on the structure or fixed on the vehicle due to continuous friction. Gaps and points of abrasion therefore occur which have a negative effect either 15 esthetically or on the service life. In addition, in the case of known panels of this type which are fixed on the structure, they have to be extremely accurate in their fitting, especially also at the transition to the seat cushion part, and therefore can only be produced 20 in a highly complicated and expensive manner.

The invention is therefore based on the object of providing a trim panel, suitable for attaching to a displaceable seat, and a seat, in particular a vehicle seat, the trim panel and seat avoiding the 25 disadvantages of the prior art.

This object is achieved according to the invention by a trim panel, suitable for attaching to a displaceable seat, the seat having a seat component which can be 30 displaced relative to at least a first part of a seat substructure, the first part of the seat substructure being movable essentially horizontally together with the displaceable seat component in relation to a second 35 part of the seat substructure, the trim panel largely concealing at least the first part of the seat substructure and being displaceable together with the

displaceable seat component. By means of the capability of the trim panel to move freely together with the displaceable seat component, such excessive mechanical loadings in the interior of the trim panel, which are 5 to be attributed to the fact that the trim panel, for example, would have to elastically absorb and compensate for the entire displacement of the displaceable seat component, do not occur. In this respect, less exacting demands are to be made of the 10 trim panel in respect of stability or wear resistance in relation to occurring material stresses which are to be absorbed elastically, are caused by the displacement and have a comparatively large amplitude. Nevertheless, of course, the trim panel has to absorb forces, for 15 example those which are caused by a user by the latter sitting down on the edge of the seat part of the seat. In this case, however, it is advantageously possible according to the invention to configure the trim panel in a simple manner to be of such stiffness and 20 stability that forces of this type caused by a user can easily be absorbed because the trim panel does not have to be designed at the same time in such a manner that it has a high elasticity over comparatively large deformation amplitudes and has this over the entire 25 service life of the vehicle. Owing to the fact that the trim panel largely conceals the seat substructure, it is possible that comparatively large tolerances can be provided between the trim panel and the seat substructure or parts or components fixed on the 30 structure or fixed on the vehicle, with the result that the requirements with regard to the accurate fitting of the trim panel can be comparatively inexacting, which reduces the production costs of the trim panel. The trim panel is also referred to below as support part.

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The seat component preferably comprises a seat cushion and/or a seat shell. In this case, the trim panel is

attached to the seat cushion, for example to the upholstery frame or spring frame of the seat surface of the seat, or to the seat shell, and is fastened elastically within limits. By this means, it is 5 advantageously possible to attach the trim panel to a point of the seat that permits the maximum amount of construction space or space for accommodating the seat substructure, which is concealed by the trim panel. The seat substructure can thereby be provided in such a 10 manner that both a large functional scope with regard to the displacement possibilities of the displaceable seat component can be realized, and also the seat substructure can be produced simply and robustly.

15 Furthermore, it is preferred for the first part of the seat substructure to have at least a frame essentially encircling the seat shell, the frame preferably running essentially in the plane of the seat shell. By this means, it is advantageously possible in a simple manner 20 to configure the seat substructure in a simple and stable manner and nevertheless to provide the seat shell with a comparatively large possibility of movement.

25 It is preferable, furthermore, for at least part of the seat component to have a decorative surface, the decorative surface at least partially covering the trim panel. By this means, it is possible to give a uniform external appearance to the trim panel together with the 30 seat, which improves the esthetic overall impression of the seat. It is thereby furthermore possible for the trim panel to be able to be produced considerably more simply and more cost-effectively because the trim panel is not directly visible or cannot be seen, for example, 35 by a user, at least in his normal viewing direction. A trim panel of this type can therefore be produced more cost-effectively and with a lower logistical outlay

because its surface does not have to be configured, for example, as a decorative surface and because, for example, the same coloring can be used for all of the decorative surfaces used.

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It is preferable, furthermore, for the trim panel to have locking elements for locking the decorative surface in place. By this means, it is possible in a simple manner to design the decorative surface in an 10 esthetically attractive manner such that excessively large areas of the decorative surface do not occur in a manner such that although they bear against the surface of the trim panel they are not locked with respect to a direction perpendicular to this surface.

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Furthermore, it is preferred that the trim panel has stiffening elements, in particular in the form of ribs which confer particularly great stability and durability on the trim panel.

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It is furthermore preferred that the trim panel covers at least the first part of the seat substructure at least partially in the manner of a skirt and in the normal viewing direction of a user. By this means, the 25 trim panel can be fastened to the seat in a particularly simple and stable manner.

The invention furthermore relates to a seat, in particular a vehicle seat with a seat substructure and a displaceable seat component, the seat having a trim panel according to the invention. According to the invention, a seat of this type can be designed in a more cost-effective and esthetically attractive manner.

35 It is preferred, furthermore, that the displaceable seat component can be adjusted in inclination and/or can be adjusted in height relative to the first part of

the seat substructure. This ensures that the seat provides a user with a maximum degree of comfort and setting possibilities.

5 It is furthermore preferred that the trim panel at least on one side of the seat conceals at least the first part of the seat substructure from a lateral viewing direction. By this means, it is advantageously possible according to the invention for the trim panel
10 to give the seat a particularly attractive external appearance to a certain extent "on first view" because a side view of the seat is generally the first view which is visible of a vehicle or of a vehicle seat after a vehicle door is opened.

15 The invention is explained in more detail below with reference to exemplary embodiments illustrated in the drawing.

20 Figure 1 shows part of a conventional vehicle seat in a perspective illustration.

25 Figures 2 and 2a show parts of a seat according to the invention with the seat upholstery removed.

Figure 3 shows a perspective overall view of a seat according to the invention.

30 Figure 4 shows a detailed view from below of a trim panel according to the invention.

Figure 5 shows a detailed view of a trim panel according to the invention from above.

Figure 6 shows a sectional illustration of part of a vehicle seat according to the invention.

5 Figure 7 shows a detailed view of the trim panel according to the invention from a direction laterally from above.

10 Figure 8 shows a detailed view of the trim panel according to the invention from the side.

15 Figure 1 illustrates a vehicle seat 100 which is conventional and known, at least in parts. A trim panel 110 or a panel 110 is arranged around a known seat part 103, with the panel 110 being fastened in a manner fixed to the substructure 102 of the seat 100. The seat part 103 or the cushion 103 moves relative to the panel 110, for example can be adjusted in height and/or 20 inclination. This results, of course, in increased abrasion or an increased wear at the contact points between the cushion 103 and the panel 110 (possibly as a function of the inclination or height which is set). If the panel 110 comprises a plurality of parts, they 25 have to be produced to be extremely accurately fitting with respect to one another, which makes said panel more expensive and furthermore causes a reduction in the service life.

30 Parts of a vehicle seat 1 according to the invention or a trim panel 10 according to the invention are described in Figures 2-6 below.

35 Figures 2 and 2a each illustrate a perspective view of part of the seat 1 according to the invention with the seat upholstery removed. Figure 2 also illustrates a trim panel 10 according to the invention. The trim

panel 10 according to the invention is not illustrated in Figure 2a. As a result, Figure 2a more clearly reveals that a seat according to the invention has, in particular, a displaceable seat component 3, for example a seat shell 32, which can be displaced in relation to at least a first part 25 of a seat substructure 2, in particular can just be adjustable in inclination, with it being also possible to make provision for the displaceable seat component 3 to be adjusted both in inclination and in height in relation to the first part 25 of the seat substructure 2. In this case, the first part 25 of the seat substructure 2 has, in particular, a frame 24 which extends essentially in the plane of the seat shell 32 or of the displaceable seat component 3. For the sake of simplicity, the illustration in Figure 2 is realized without a seat cushion or seat upholstery. The seat 1 comprises the seat substructure 2 and the displaceable seat component 3. The displaceable seat component 3 can be adjusted in height and/or can be adjusted in length and/or can be adjusted in inclination relative at least to parts of the seat substructure 2. According to the invention, the trim panel 10 is used for the lateral cladding or covering on the seat 1 or in the vehicle seat 1. The trim panel 10 therefore fulfills the function of a support part which permits or brings about a means of protecting a user of the vehicle seat from looking with respect to normal viewing directions at the seat substructure 2. In the case of a vehicle seat 1 according to the invention, it is precisely the construction which causes parts of the structure or a displacement device of the seat 1 to be arranged, in particular, laterally below the seat cushion.

35 Figure 3 illustrates a perspective overall view of a seat 1 according to the invention with a trim panel 10 according to the invention. In the case of the

embodiment in Figure 3, the entire seat 1 including the trim panel 10 is covered by means of a decorative material or by means of a decorative surface 33, with the result that overall a uniform exterior and 5 therefore a very advantageous appearance can be conferred on the seat 1.

Figure 4 depicts a detailed view of the trim panel 10 according to the invention from a direction from below 10 the seat 1 or the seat shell 32. The trim panel 10 is fastened to the seat shell 32 by means of fastening elements 11, for example screws, clips, rivets and the like. Instead of the seat shell 32, of course also a seat frame or a spring frame of a seat surface of the 15 seat 1 can be provided according to the invention as location of attachment of the trim panel 10. The trim panel 10 covers the seat 1 (or in particular the substructure 2 of the seat 1) in an, in particular, lateral region 12 (but possibly also front and/or rear 20 region) in the manner of a skirt, with the result that below the seat shell 32 there is, firstly, sufficient space for the displacement mechanism of the seat 1 and, secondly, this displacement mechanism or the parts of the seat substructure 2 is/are protected in an esthetic 25 manner against a user looking at them from a usual viewing direction. Furthermore, stiffening elements 14 of the trim panel 10 which, in the exemplary embodiment, are designed as ribs or stiffening ribs 14 are visible in Figure 4.

30 Figure 5 shows a detailed illustration of the trim panel 10 on a seat 1 from above, but with the seat upholstery not being illustrated for the sake of simplicity. The trim panel 10 is attached in turn to 35 the seat shell 32 or the upholstery frame of the seat 1.

Figure 6 shows a cross-sectional illustration of a vehicle seat 1 with a trim panel 10 according to the invention. Again, the seat shell 32 is illustrated with the trim panel 10 fastened to it via fastening elements 11. Different parts or components of the seat substructure 2 can likewise be seen. In this case, the seat substructure 2 is referred to in summary by the reference number 2. However, it is clear that the first part 25 of the seat substructure 2 is movable together with the displaceable seat component 3 or together with the seat shell 32 horizontally, in particular in a longitudinal direction of the vehicle, in relation to a second part 26 of the seat substructure 2 or in relation to the vehicle body.

Various contours in various cross-sectional planes of the seat cushion 31 are likewise illustrated in Figure 6. The seat cushion 31 is covered overall by means of a decorative surface 33, with the decorative surface 33 also covering the trim panel 10 in addition to the seat cushion 31, with the result that, according to the invention, a particularly uniform and esthetic design of the seat 1 is possible. All customary decorative materials, such as, for example, woven fabric, leather, knitted fabric, films and the like can be used as the decorative surface 33. Particularly suitable as material of the trim panel 10 are: plastics, as are used in molded plastic parts in the interior of a motor vehicle. According to the invention, it is particularly advantageously possible to lock or to fasten the decorative surface 33 to the trim panel 10. This is advantageous because excessively large areas covered by the decorative surface 33 are thereby avoided. Such areas may, firstly, have an esthetically poor effect and, secondly, such surfaces may lead to the decorative surface 33 going wavy, i.e. not resting smoothly against the trim panel 10, and

causing creases. To avoid such disadvantages, provision is made in an advantageous embodiment of the invention to provide locking elements 13 on the trim panel 10, by means of which the decorative surface 33 is locked in place at least in a direction perpendicular to the surface which it covers. For this purpose, it is advantageously provided according to the invention for the decorative surface 33 to have a locking means 34 which is complementary to the locking elements 13, for example for it to form a loop into which a wire 35 is sewn in the longitudinal direction of the seat or of the vehicle (i.e. running perpendicularly to the plane of projection in Figure 6), with the sewn-in wire 35 being able to be locked in place by means of the locking elements 13, for example by clipping in, pushing in, latching in or the like. In this case, the locking elements 13 can be designed, for example, as fastening hooks or fastening clips. At the lower end 15 of the trim panel 10, the decorative surface 33 is connected to the trim panel 10 in a conventional manner, for example by means of fastening holes or fastening hooks by means of a hook-in strip.

The trim panel 10, which is also referred to below as bracing part 10, is fastened according to the invention in the course of the seat assembly to the seat shell 32 or the cushion shell 32, for example with hollow rivets as fastening elements 11. In a preferred manner, the seat cushion 31 or foam part 31 is then placed on and subsequently the decorative surface 33 or the cover 33 is placed above the seat cushion 31 and fastened at all necessary fastening points, in particular by means of the locking elements 13 or at the lower end 15 of the trim panel 10. In this situation according to the invention, the trim panel 10 always moves together with the seat shell 32, so that no abrasion or the like arises. Since the surface of the trim panel 10 is

concealed by the decorative surface 33, it does not manner whether, during installation of the trim panel 10, scratches arise on the latter. Furthermore, owing to the comparatively high (dimensional) tolerance of 5 the soft decorative surface 33, high accuracy in fitting the trim panel 10 is advantageously not required, with the result that the requirements in this regard are comparatively inexacting, which makes the trim panel 10 less expensive. If the trim panel 10 is 10 formed from plastic, an integration of fastening elements 11 or of locking elements 13 is facilitated. According to the invention, it is advantageously possible by means of the trim panel 10 for the seat cushion 31 to obtain a good support or a good base 15 which, in particular when a person gets into or out of the vehicle, constitutes a stable substructure and prevents the seat cushion 31 or the seat foam 31 from tilting. As an alternative to forming the trim panel 10 from plastic, it is, of course, also possible according 20 to the invention to provide the trim panel 10 as a sheet-metal part - in particular riveted or screwed or welded onto the seat shell 32. Furthermore, it is possible according to the invention to provide the trim panel 10 integrally with the seat shell 32. It is 25 preferred, in particular, for a displacement switch (not illustrated) for the seat displacement to be integrated in the trim panel 10.

Figure 7 illustrates a detailed view of the trim panel 10 according to the invention from a direction laterally from above, and Figure 8 illustrates a detailed view of the trim panel 10 according to the invention as seen from the side. The seat cushion 31 can be seen in both figures, and, in addition in 35 Figure 7, the profile of the locking means 13 and of the locking means 34, which are complementary thereto,

of the decorative surface 33 in the longitudinal direction of the seat or of the vehicle can be seen.

List of reference numbers

- 1 Vehicle seat
- 2 Seat substructure
- 5 3 Displaceable seat component
- 10 Trim panel
- 11 Fastening elements
- 12 Region
- 13 Locking elements
- 10 14 Stiffening elements
- 15 Lower end of the trim panel
- 24 Frame
- 25 First part of the seat substructure
- 26 Second part of the seat substructure
- 15 31 Seat cushion
- 32 Seat shell
- 33 Decorative surface
- 34 Complementary locking means
- 35 Wire
- 20 100 Known vehicle seat
- 102 Known substructure
- 103 Known seat part
- 110 Known panel